A PRIZE THESIS

ON

PUERPERAL FEVER

FOR THE DEGREE OF

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BY

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TO MY BELOVED PRECEPTOR

DON PEDRO FERNANDEZ MADRID

The eminent Statesman

AS A TOKEN

OF MY MOST PROFOUND GRATITUDE

THIS THESIS

Is respectfully dedicated.

THE AUTHOR.

PUERPERAL FEVER.

I am going to enter upon the consideration of a subject which has attracted the attention of the most prominent men of our Science since the earliest times, and which, even now, gives origin to investigations and speculations of all kinds.

The study of Puerperal Fever, therefore, is not deficient of interest, and in all centuries and from different nations new theories constantly have been appearing, which, notwithstanding their comparative fallacy, will all help definitely to prove in a future day the true etiology and treatment of this terrible disorder.

A careful attention has always been paid to the progress of its symptoms; unfortunately, it seems to me, the different authors have only taken into consideration the feature of the disease that appeared to them to be the most prominent, and have founded upon it the edifice of their speculations, and this want of unity has given rise to such a variety of opinions : *Ex uno plures* and not *e pluribus unum*.

We see, indeed, that the ancients were struck by the peculiar state of the *lochia* and their final suppression in this disease, and, therefore, considered it to have originated in the increased flow or the cessation of that secretion. This theory had its origin with Hippocrates and Galenus, and lived for a long series of centuries.

Suddenly, however, about the termination of the XVIIth century, the theory of the *Metastasis of Milk* was announced, and it continued many years in existence, until it lost weight by the researches of Bichat, the celebrated French physiologist.

Again, investigators did not rest satisfied with the study of these external manifestations : they applied to the dead subject, and found in the various pathological lesions, sufficient ground for new and luminous speculations.

The inflammation of the uterus, as it is one of the most constant features, attracted their attention, and the theory of *Metritis* was proclaimed. Later on, however, closer observations demonstrated the inflammation, not only of the muscular textures of the womb, but also of its venous plexuses, and the doctrine of *Uterine Phlebitis* was vigorously sustained. Afterwards, however, the lymphatics were also found engaged, and the theory of *Uterine Lymphatitis* was proposed.

Further on observers laid aside their attentions concerning the womb and considered the peritoneum as the starting point of the disease : even more, they connected the peritoneum with the uterus, and by contiguity of tissue they reached the intestines, and so we find the doctrines of *Puerperal Peritonitis*, *Puerperal Metro-Peritonitis* and *Puerperal Entero-Peritonitis* each assuming their own rights in the disputation.

We now find, however, that each of these theories in turn was a step towards the attainment of juster views, and that all those various lesions which they happened to find in their anatomical investigations, are merely the result of one single disorder, or rather, the series of disorders produced by the same cause.

I hear of writers who recognize the unity of the pathogenic agent in Puerperal Fever; but propose to abandon this term merely to adopt the plurality of puerperal affections, and to consider metritis, peritonitis and so forth, occurring to women after labor , as independant disorders. This plan would be convenient as regards treatment, for, in fact, when this terrible malady has set in, our only possibly successful resource will be that of attending to the symptoms as they appear, in the same way that if our house is burning, should we not attend to each separate apartment that begins to be destroyed by the flames; but why not recognize the common cause, the fire, that is producing a universal destruction, and against which our main efforts must be directed?

The era, however, of simple theories and abstract speculations has terminated, and our decisions will henceforth be based upon clinical facts and experimental results. The study of Puerperal

Fever, like that of many other diseases, has been benefited by this experimental way of investigation, which the scientific world is now resorting to with so much profit. The ideas, therefore, that are now entertained on the nature of the disorder under consideration, are the fruit of the close observation of repeated clinical facts and of recent experiments. Those to which I shall have occasion to refer hereafter, have been made for the most part at the Hospital Necker, at the Hospital Saint-Antoine and at the Maternité of Paris.

We now consider Puerperal Fever as a disorder occurring to women after labor, characterized by a series of more or less marked general and local lesions, and originating in the absorption of morbific materials. These materials produce, according to their intensity and quantity, a variety of symptoms, more or less characteristic, more or less dangerous to life; and these symptoms are for the most part, if carefully examined, the same that were considered by the ancients as the primary pathogenic agents of the disorder, such as metritis, peritonitis, suppression of the lochia, etc.

The observation of the symptoms which characterize Traumatic or Surgical Fever, and their similarity to those presented by Puerperal Fever, has led to this brilliant idea. It had its origin with Van Swieten about the middle of the last century; but it was not adopted at that time.

Cruveilhier, however, revived it and it has received the approbation of men like Jules Guérin and Professor Simpson of Edinburgh.

The only point in which authorities still differ on the subject, is the nature of this morbific material. More and more new researches, however, are constantly being made, and this principal question will at last be definitely established.

We may, I think, enumerate all the materials that enter the system and act upon it as pathogenic agents, in the following general division: 1st. Inorganic or chemical substances; 2d. Organisms.

The characteristic feature of Organisms as regards their action on the system, is the power of reproduction. The power of self reproduction, indeed, is only found in beings endowed with life, either animal or vegetable. Science will perhaps discover some day, that dead organisms can also enter the system; being dead, they cannot reproduce themselves, but they will induce a series of particular phenomena. We shall by that time recognize diseases depending on the absorption of dead organisms, and disorders caused by the presence of organisms still endowed with life.

To discover the modes of generation of these organisms will be one of the greatest triumphs of modern science. A good deal has already been done however, and the study of the process of putrefaction affords us many ideas. Let me refer to it for a moment, as it may throw some light on the subject of Puerperal Fever.

Organic beings, when they have lost their vitality, decompose, that is, separate themselves in their constituents. Oxygen is the great agent in this process, that serves to keep up the equilibrium of life, as we may call it, since those separated substances will help in the formation of new beings. This simple operation of oxygenation is by itself destitute of any septic power.

The process is interesting : the Lime and the alkalies fix the Sulphur and Phosphorous and help the evolution of Ammonia, whilst Oxygen exerts its action upon Hydrogen and Carbon, and Nitrogen is fixed in the form of nitrates. This process is merely a decomposition, an oxidation, but not a putrefaction.

Let us expose, however, the decomposing matter to the action of the open air, and we shall see that the innumerable germs or living organisms that fill the air and waters, fall upon it and produce putrefaction, by which they appropriate from the late living tissues that which vitalizes them. This process cannot, therefore, be accomplished without the presence of these living organisms. The experiments of Gay-Lussac, Schwann and Schroëder prove this assertion.

Now again, if a substance can only produce septic properties unless it is putrefying, and if putrefaction is only produced by those germs, they must be recognized as the septic agents.

But observation has also shown that the less oxygen is carried to a decomposing substance in the presence of these germs, the more septic the putrefaction will be. Oxigen, therefore, is a great antiputrefactive agent.

The microscope has already revealed the existence of some of these organisms and their characteristic features. We recognize among the animal parasites, the *cysticercus cellulosæ*, that invades the cellular tissue of the pork and the mutton; the *trichina spiralis*, that attacks the muscles; the *distoma hepaticum* and so forth.

Among the vegetable parasites we know of the *oïdium albicans*, and more especially, the *bacteriæ*. This element has attracted great attention, because of the wonderful rapidity with which it is propagated through the system.

If we examine the lochial discharge, under the microscope, we shall discover from the second to the fourth day a considerable number of bacteriæ and vibrions. These elements, however, disappear when putrefaction begins. But do they really disappear or assume another form?

Dr. Quinquaud of Paris showed to the Biological Society en 1869 the phenomena observed when the stems of certain vegetables were macerated. Water was imbibed through the peripheric layers, and upon them very characteristic *Amylobacteres* were developed. Putrefaction had not yet commenced; but towards the fourth or the fifth day the amylobacteres disappeared to be replaced by simple bacteriæ; and finally, when putrefaction commenced, nothing but vibrions were to be seen.

We cannot, therefore, determine by mere microscopical examination how and when these correlated transformations stop.

I have gone through this digression to show the proneness now existing to consider Puerperal Fever as caused by the absorption of these bacteriæ into the system. I have seen a pamphlet, published in Leipzig by Professor Heiberg, with several printed plates, in which the following objects are brought to view : the ramifications of a lymphatic trunk almost plugged up by colonies of these bacteriæ ; the liver with one of its lymphatics in the same condition ; the heart with one of its valves destroyed by colonies of these parasites, etc.

We know, indeed, that *post-mortem* investigations of cases of Puerperal Fever, show, in the vast majority of cases, the vessels plugged by these deposits; but is Prof. Heiberg right in determining them to be formed of bacteriæ ? This cannot as yet be decided.

Other writers, following I suppose the opinions of Liebig, speak not of a parasite, but of a chemical agent producing purely chemical fermentations in the liquids of the body, these fermentations being capable of generating an analogous ferment, without the production of an organized being. My opinion is that to speak of purely chemical fermentations is to contradict to a great extent the researches of Schwann, Pasteur and others. Even in the alcoholic fermentation it seems already demonstrated, that it is caused by an organism, that constitutes the ferment, and which, by living at the expense of the sugar, disassociates its elements by the production of carbonic acid and alcohol.

We see, therefore, that the present state of our knowledge on the matter is still limited. The majority of authors, however, agree in the main point : that Puerperal Fever is produced by the absorption of a morbific agent.

And how is this absorption carried on? The elucidation of this point satisfactorily is as difficult as to determine the nature of the pathogenic material itself. This difficulty was fully noticed by Dupuytren in a Memoir presented to the Institute of France in 1825. This celebrated surgeon pointed out that these agents may be communicated by contact, by friction, by inoculation and by means of the atmosphere. Scarlatina for instance, cannot be communicated by inoculation, nor Syphilis by means of the air. Each agent has, therefore, its own way of getting into the system.

As regards the surfaces of absorption, we have in first place the skin with its protecting epidermis, that allows only of a limited number of substances to pass in, in a certain form; whilst the derma beneath is an excellent absorbent surface. We have the ocular conjunctiva, deprived of epidermis, and endowed thereby with great powers of absoption. We have the digestive canal, and finally, the pulmonary surface.

These membranes are, under ordinary circumstances, the protecting coverings of the subjacent tissues, and allow only of certain materials to pass through; but we may readily understand that a solution of continuity in one of them, will destroy its protecting power.

And by which of these membranes does the morbific material get access to the system? I regret to say that, even now, discussions arise on the subject. The similarity, however, that is already established, between puerperal women and the wounded, a similarity accepted by men like Trousseau, indicates the solution of continuity of the mucous membrane of the utero-vaginal canal, as the natural point of entrance of that material. There are still some authors, however, who believe in a specific *miasm* generator of the disease, and which gets entrance by the respiratory tract. We can only find, however, in very exceptional instances women attacked by Puerperal Fever before labor sets in, and even in these cases, it would be easy perhaps to find a solution of continuity of some kind at their genital organs. If the agent penetrates through the pulmonary membrane, why the supervention of this disorder at any time, before or after labor, is not the general rule? Besides that, the question might be asked why a miasm that penetrates through the lungs, would produce metritis as the first most constant symptom? As regards the especial miasm itself, it has not yet been demonstrated.

Those, however, who defend the miasmatic theory, say that patients suffering from Puerperal Fever have transmitted the infection to pregnant women before their labor, even more, to women that were not pregnant at all. Facts do not seem to corroborate these assertions, and, therefore, whilst nothing positive offers to contradict us, we shall not believe in the said miasm reaching the system by the pulmonary membrane.

Puerperal Fever consists, therefore, in a series of lesions, produced by the absorption of *septic* materials at the solution of continuity of the utero-vaginal canal, and which lesions are more or less severe according to the dose of the septic materials introduced. It is a puerperal *septicaemia*, and this term explains its etiology.

CAUSES.

The causes of Puerperal Septicæmia may be divided into those found in the woman herself, and those derived from the exterior.

The expulsion of the fœtus is always attended by a traumatism more or less violent : the detachment of the placenta leaves the uterine sinuses opened ; often the neck of the uterus is lacerated as well as the *fourchette* and the perineum. This occurs more commonly in primiparæ. In the ordinary cases of labor these solutions of continuity are closed by the retraction of the uterus, which contracts upon itself and shuts the bleeding mouths of these vessels as well as the lymphatics. The physiological uterine *thrombi*, described by Virchow, are then formed, and the process of cicatrization and involution goes on regularly and naturally.

But let us suppose that any cause producing uterine inertia, such as a hemorrhage, will leave these solutions of continuity exposed, then the internal surface of the womb is capable of absorbing any septic materials, such as those derived from clots of blood, pieces of membrane and the lochial discharge, all of which may decompose and suffer putrefaction under the influences above enumerated.

Even supposing, however, that the womb has completely contracted from the termination of the labor, we may find, particularly in primiparæ, solutions of continuity in the neck or the vagina, that may as well absorb the septic elements.

These are the most important predisposing causes that are to be found in the woman. Authors, however, also allude to the moral and physical state of the patient, previous to the labor, as circumstances having some influence, if not on the production, at least on the aggravation of the evil. The condition, indeed, of most women who apply for admission into the lying-in asylums is very distressing. They are not only stricken with the most deplorable poverty, but perhaps endeavour to hide themselves from the shame and remorse of a crime. Their past is full of grief, and their future threatens misery. These circumstances certainly produce an impression on their nervous system. Cases are reported at the Maternité, of girls in almost a state of convalescence after an attack of Puerperal Fever, to have died after a censure from their parents, or having heard fatal news about their infants. The same thing may be said of their physical condition; and we may understand how a uterine catarrh, by retarding cicatrization, may be an indirect cause of the admission of the septic agent.

As regards the exciting causes, or those derived from the exterior, we may point out as the most prominent, the presence in the atmosphere of the septic material. It is not thought that, in the majority of cases, the absorption is effected directly from the air, but that the air enters the cavity of the womb, and by the septic materials it carries in, corrupts the lochial secretion or the clots of blood or the remains of membranes, and from these the septic absorption takes place; and as I have said in another section, the more intense the putrefaction, the less quantity of pure air will get into the cavity.

It may be accepted, however, according to Meckel, that in some rare cases the air itself may get into the veins at the time of labor; or the same absorption from the air may occur in the epidemic cases.

The vitiated atmosphere of hospitals is, therefore, an important determining cause. If we expose a glass containing snow to the emanations produced in the wards of a hospital, we shall observe how innumerable corpuscles, formed of proteic matters, also epithelia, cells and vegetable spores are deposited on the sides of the glass. These materials must, of course, act as putrefying agents, either carrying themselves the parasites or producing the series of their correlated changes in the cavity of the womb, resulting from the putrefying process itself.

The septic power of putrid lochia has been fully demonstrated by recent experiments. Injections have been practiced on rabbits and Guinea pigs, and curious phenomena have been observed. Those made with filtered normal blood, or the amniotic fluid or the vaginal mucus, do not produce any pyretic results. Injections made with filtered solutions of lochia, obtained at the end of the first day, produce a marked fever, but which disappears again promptly without any notable alteration of the general health; but those made with filtered solutions of lochia obtained at the third day, determine a marked and persistent fever, abscesses form at the seat of the injection, and the animal often perishes from septicæmia.

Obstetrical operations, such as the application of the forceps or the performance of cephalotrypsy or version, are also classed among the exciting causes. The reason, it seems to me, why they are so considered, is because they may increase the traumatism. Trélat gives us the following list from observations at the Maternité :

Years.	Ordinary mortality in 100.	Mortality after operations in 100.
1861	11,73	41,67
1862	7,49	37,50
1863	13,70	42,80
1864	20,26	46,15
1865	5,97	15,62

Meteorological conditions seem to exert an influence upon Puerperal Fever. Observations made at the Maternité of Paris and also at the Maternité of Vienna for a large number of years, tend to show that mortality is greater during the cold season. Perhaps the reason may be found in the difficulty that exists in those months of heating and at the same time properly ventilating the buildings. Cases, however, have become aggravated after a sudden change of temperature; weather, therefore, seems really to exert some influence upon the disease.

The increase of patients by the consequent overcrowding of asylums is undoubtedly a cause of the exacerbation of the disease. In the Maternité of Vienna the ordinary mortality had been observed to be of 4 in 1000 when the number of patients had not exceeded 3000; but from the year 1819 the number of patients received has exceeded those figures, and the number of deaths has also increased in a remarkable manner: 4, 7, 8, 10, 16 in 100 per year.

INFECTION.

To become infected, is to take up or to receive the infecting material. An individual becomes infected, when he has absorbed or received into his system the septic agent.

The air of a locality may be vitiated, that is, it may contain substances of all kinds, that make it any thing but pure; but if among those substances the toxic material is not found, the air is not infectious. I do not mean to say by this that there is only one toxæmic agent; many substances, indeed, of an entirely different nature may be SEPTIC, inasmuch as they resemble in their power of producing putrefaction. And in the same way many other substances such as particles of dust, bad odours, etc, may deprive the air of its purity without being septic.

But if in any locality septigenic materials are accumulated, the septic particles are formed and the air gets infectious, and will infect in its turn the individuals under its influence.

An accumulation of puerperal women is by itself an accumulation of septigenic agents. However pure their secretions may be in the beginning, the air of the asylum has the tendency to become septic and therefore infectious. These accumulations will increase as long as the asylum is kept up, and the air of it will be more pernicious every day. The following tables will show the truth of this assertion :

Maternité of Vienna.

Years.	Mortality in 100.
From 1784 to 1813	2,1
» 1814 » 1822	4,9
» 1823 » 1839	10,4
» 1840 » 1846	16,9

Maternité of Paris.

From 1801 to 1818	6,94
» 1819 » 1828	7,39
» 1829 » 1860	11,62
» 1861 » 1864	18,43

These observations are very important in a prophylactic point of view.

CONTAGION.

By contagion we understand the transmission of the disease from an infected patient to a healthy one, by means of a physician, a nurse or any other person carrying the morbific agent. Experience has shown the possibility of contagion of Puerperal Fever in this way.

We can readily understand, indeed, that patients suffering from this disease may make the air infectious by their emanations, and from this vitiated atmosphere other patients may experience the evil if placed in favorable conditions, such as in the wards of a hospital. This is the way in which most epidemics have arisen. But if we grant that the air may receive the septic organism, we may also take for granted that these organisms may be deposited, let us say, on the clothes of a person; and if this person makes the air infectious in the ward or other appartment where a puerperal woman is confined, the latter may become infected. This is not a mere speculation; many authors, such as Ramsbotham, Gordon, Gooch and others, describe epidemics occurring in towns only among patients attended by a certain physician, while those attended by another did not suffer at all. And cases are reported of practitioners having succeeded in stopping these epidemics outside of asylums, by taking hygienic precautions with themselves.

Dr Semmelweiss of Vienna, after repeated observations, shows that infection has been produced by physicians and students carrying septic materials from anatomical dissections. This fact demonstrates that septic agents may be carried, not only by the air, but also by individuals; and it teaches how careful a practitioner must be in treating a puerperal woman, after having been engaged in anatomical investigations, or having immediately before, attended patients with Puerperal Fever, Erysipelas or disorders of the same nature.

There is at present a great inclination to consider of the same nature, not only Surgical and Puerperal fevers, but also Hospital Gangrene, Erysipelas and such like.

One patient, generally speaking, is not able to make the surrounding air sufficiently infectious to produce an epidemic in a district for instance. Sporadic cases, therefore, in private practice are comparatively rare; that is not, however, the case in asylums. Malgaigne reported the mortality from Puerperal Fever in the hospitals of Paris during the years 1861 and 1862, to be 8.2 in 100, and in the city and suburbs only 0.5 in 100.

While I am writing this, I have before me an account of more than forty great epidemics that have occurred in different parts of Europe during the last two centuries; and they have almost all been observed in hospitals and lying-in asylums.

Epidemics in towns or cities, outside the hospitals, are exceedingly rare, with the exception of those pointed out as occurring under the practice of a certain physician; and this fact shows how much control upon the prevention of this disorder will be obtained in private practice, by attention to hygienic and prophylactic measures.

PATHOLOGICAL ANATOMY.

I shall be allowed to bring forth a comparison before considering this important point of the anatomical lesions.

Let us suppose that we have a building full of wet and also dry straw. If we apply fire to the wet straw, the material will burn slowly and more or less feebly, although the fire may also burn some portions of the building. But if the fire ignites the dry material, or if we apply the flame to it in the first instance, then we shall observe a quick combustion, more or less violent, and its effects will be peculiar.

In the uterus we have the lymphatics representing the wet straw and the veins the dry material. The absorption through the former is the most frequent, a lymphatitis being the starting symptom. But this absorption is slow; the septic material is stopped, as it were, at each gland, and new centres of infection are formed, accompanied by alternate recrudescency of the symptoms. Septicæmia is here well marked; and in the same way as the fire may or may not have burned the building in its passage, we may observe partial or general peritonitis, or no peritonitis but pleurisy, or arthritis, or phlegmons and diffused parenchymatous inflammations.

The absorption, however, by the veins is quick, its effects are sudden and violent. The theory of *embolism* is realized; symptoms of pyæmia appear, and metastatic visceral and muscular abscesses are discovered.

Sometimes the primitive absorption through the lymphatics may be complicated by absorption through the veins, and we observe pyæmia as a complication of septicæmia. Septicæmia and pyæmia are, therefore, the same speaking in a clinical manner.

Experiments recently made on animals, have shown that the injection of a putrid material in a state of great solution, produces septicæmia, but if the material is applied in a more concentrated form, pyæmia is produced.

We see, therefore, that the anatomical lesions found after death, will greatly depend on the way in which the absorption has been carried on.

The blood will be found to contain a number of filaments, upon which neither acids nor alkalies have any control; perhaps acetic acid makes them become paler. These filaments might be taken for bacteriæ but probably they are merely fibrin in a particular form.

The lungs will be found to contain points of vesicular granular pneumonia, characterized by indurations that may be felt through the soft tissue of the organ. These indurations are surrounded by a hyperæmic zone; this lesion is also found in typhoid fever, variola, etc. In other cases the vessels of the pulmonary surface are found thrombosed, the lymphatics presenting at certain points expansions containing a peculiar material. These lymphatics form a close network, enclosing hyperæmic zones. The pleuræ are found covered with false membranes.

Sometimes, though not commonly, abscesses are found on the walls of the bladder; the brain, but more frequently the meninges may contain them also. In the ovaries purulent cysts are sometimes discovered.

The joints are found affected; their serous membranes are hyperæmic and the cartilage rough and sometimes eroded.

During some of the great epidemics careful autopsies have been practiced. In many of them the abdominal visceræ have been found very much altered, their cavities containing milky serous fluids. Great hyperæmia, thickening, false membranes, adherences and even diffused supurative patches were discovered.

All these lesions show the tendency of the septic agent to produce a general congestion and inflammation of the tissues.

SYMPTOMS AND PROGRESS.

We may readily understand that the symptoms and progress of Puerperal Fever will depend upon the way of absorption and the concentration or intensity of the septic agent. It is not, therefore. one of those diseases in which we have a series of constant, well marked and successive symptoms ; we have in these cases various phases to observe various effects of the same cause, varying anatomical lesions.

We shall study at once the nature of the febrile disturbance.

Winckel has observed that during the first twelve hours after labor, in physiological cases, there is a slight elevation of temperature with increased pulse. During the last twelve hours, however, the temperature descends again very remarkably. From the second day it is again increased slightly, and this increase, which follows the development of the lacteal secretion, is continued until the fifth day. It ought not, however, to exceed the physiological limit. The figure given as the physiological limit is 101°.3 F. Out of the puerperal state an elevation exceeding 100°.2 F. shall be considered pathological, but in these cases the puerperal traumatism must be taken into account. These are the physiological rules.

We may easily detect, therefore, by the thermometer, if any thing is wrong. For instance, if we discover that the elevation of temperature during the first twelve hours, instead of being slight, exceeds the physiological limits, we may fear some unhappy consequence. The same may be said if we do not discover the descent of temperature during the last twelve hours of the first day.

Sometimes, however, a benign fever, that has called the attention of most authors, supervenes during the first week. It generally commences on the third day, very rarely on the first, second or fourth days; it may attain its maximum (perhaps 104° or 105°8 F., with a pulse of 112, 116 or even 120) on the third or fourth, perhaps on the fifth or sixth day; but from the sixth day it descends rapidly. Generally there are no rigors at the commencement and very rarely vomiting is present; but there is anorexia, thirst, perhaps cephalalgia, and a kind of pain, or rather a hyperæsthesia of the uterus is felt.

This slight fever has been called for a long time *Milk fever*, inasmuch as it was thought that the development of the lacteal secretion was its true cause. But recent investigations have shown that this is not the case, since it has been demonstrated that in repeated instances, where the development of the lacteal secretion has been attented by great tumefaction, tension and painfulness of the breasts, there has been complete apyrexia and *vice versa*.

This fever is considered by some authors to be entirely traumatic, and is compared to the traumatic fever of the wounded. Others, however, recognize in it the elements of a slight septic infection; and point out how easily this fever of the first week may be gradually followed by a slight secondary fever, lasting three or four days, in which we may observe some diarrhœa and slight fetidity of the lochia. The cessation of the febrile action, therefore, at the end of the first week, is a very important point in the prognosis.

The character of the fever in well marked cases of infection is peculiar. In the most violent cases, where the patient dies during the first week, the symptoms may appear during the first twenty four hours. There is a rapid increase of temperature, and the patient may die on the second or the third day; or perhaps there is a remission, and the temperature, after a descent, will reascend again, death occurring about the eighth day.

In cases where the malady is continued longer than the first week, the peculiar nature of the fever is well marked. It is characterized by a continuity with long remissions; it has been called for this reason *pseudo remittent* fever. The points of maximum do not attain, I think, over 107° F. Exacerbations are also noticed during its course, as if new centres of infection were formed in the interior of the organism.

The progress of the disease varies greatly in different cases. We may see violent attacks of infection that kill the patient in two or three days, after a sudden elevation of temperature, or a remission may supervene, after which a new exacerbation takes place, and death occurs about the end of the first week. In milder cases, however, the maximum is obtained during the first septenary, and a decline towards recovery is noticed from the eighth day.

On occasions, when this lessening has been established, a chill supervenes suddenly, there is a recrudescency of the symptoms, pyæmia may be suspected about the middle of the second week, and the patient may die about the third week from the time of labor. Sometimes, however, a continued fever, pseudo-remittent, of a subacute character may be established, and the patient may linger for several weeks, until an elevation or a descent of the temperature will bring a fatal or a favorable termination.

Puerperal septicæmia is generally ushered in by a chill, followed by a rapid rising of temperature. The chill, however, is sometimes absent at the beginning, and may supervene during the course of the disorder, or it may not supervene at all in very favourable cases.

The lochia get fetid.

As the peritonitic form is the most frequent, we shall observe from the second to the fourth day generally, tenderness or even violent pain at the hypogastric region, at the iliac fossæ or at the region of the kidneys. Pains of the sides or in the back may also be present.

Diarrhœa is a common symptom; less so epistaxis. — There is also tympanites.

Cutaneous eruptions may appear.

Disorders of the joints, such as rigidity and painfulness, are observed.

Dyspnœa — great thirst — anorexia — vomiting — cephalalgia — albuminuria and hæmaturia, are not unfrequently present.

The pulse is generally frequent, feeble and filiform.

The features become altered : a shade like that of lead invades them. — Delirium supervenes that may become violent.

These are the general symptoms, but some of them may be wanting, or they may be slight or, on the contrary, very violent, according to the intensity of the infection and the internal lesions. So that we may have a patient presenting a good appearance after her labor, but suddenly the pulse becomes rapid and imperceptible; the heart sounds are feeble; dyspnœa comes, with tympanites and slight pain in the hypogastrium. These symptoms become soon aggravated and the patient dies in two or three days. Post-mortem examination will perhaps reveal but very few or almost no anatomical lesion : perhaps only a clot in the right ventricle of the heart, continued in the pulmonary artery.

Pyæmia must be considered as a dreadful complication of septicæmia. The infection by the veins produces it. I have already alluded to the identity of these two disorders speaking in a clinical sense.

The complication of pyæmia may be suspected when the patient, during the second week is suddenly taken with shivering after a remission; she becomes delirious and some *jaunness* appears. If at the same time symptoms of acute affection of the lungs supervene, or a *phlegmasia alba dolens* is developed, the diagnosis may be made with certainty.

The metastatic abscesses appear as a consequence of uterine phlebitis; they are not found in lymphatitis without phlebitis. This uterine phlebitis is almost always preceeded by metritis or para-metritis.

Both the pleuræ and the membranes of the heart may become implicated during the course of the infection.

PROGNOSIS.

The prognosis in sporadic cases is generally good, although frequently they have proved fatal. If the patient is in a hospital or during the time of an epidemic, the prognosis will be greatly influenced by these circumstances.

We may point out as bad signs: continuation of the fever after the first septenary; persistence of abdominal pains; any increase in temperature; symptoms of pulmonary trouble or metastatic abscesses.

The decrease of temperature after the first week; remissions accompanied by profuse sweating, and the augmentation of urea and chlorides in the urine, are favorable symptoms.

TREATMENT.

I shall not endeavour to discuss the different drugs that have been pointed out for the treatment of Puerperal Fever; this would be a long and difficult task. For my part I must confess that I believe but very little in the good effects of drugs in this disorder; and the reason is obvious : we have a septic agent which has invaded the system, and against which we do not know of any antidote. It is an agent that Nature only can eliminate, for our efforts in this respect are powerless. We have, therefore, to help Nature, that is, to stimulate it, to give it strength and resistance; to keep up the vitality as long as possible. The tonic and stimulating treatment must be, therefore, adopted, attending to the symptoms as they present themselves, in order to avoid further complications. The only drug in which some confidence might be placed perhaps, is, it seems to me, the sulphate of quinine.

An emetic of ipecácuanha seems to be always very useful at the beginning; it is preferable to the tartrate of antimony and potassa, but in a few cases they may be combined.

Cathartics must be administered with great caution, remembering that diarrhœa is a most common symptom; sometimes, however, when we wish to change the nature of the intestinal secretion, a mild cathartic may be used, such as castor oil, manna or calomel, with alkaline drinks, such as acetate of potash or bicarbonate of soda. This is also useful if nephritis with albuminuria is present, and when eclamsia is threatening, particularly if there is constipation. Saline purgatives seem to exert an irritating and congestive action upon the kidneys.

Camphor and opium are valuable agents; the hypodermic injection of morphia may be applied with success.

The tincture of aconite is recommended to counteract the pyæmic symptoms.

The febrile action may be abated by quinine or veratrum viride.

As topical applications, the intra-vaginal and intra-uterine injections, containing antiseptic substances, such as the infusion of chamomile with chorinated water, may be recommended. These applications are not entirely deprived of danger, and we must be careful to employ the proper catheter, to use a mild injection, and, in fact, to try by all means not to carry to the uterus what we just endeavour to destroy, that is, septic materials.

Mercurials have been highly recommended for their antiphlogistic power. Mercurial ointment is the favorite preparation, combined perhaps with the internal administration of calomel.

Other derivative ointments, such as that of iodine, may be used topically in localized indurations etc., during the decline of the disease.

As regards bloodletting, I think we must earnestly condemn venesection. We must remember that the woman is in a state of great debility after her labor, and that by diminishing the quantity of blood in her system, we remove all probability of success on the part of Nature, in eliminating the septic material.

Leeches and cups are preferable. Blisters also may be applied; but we must remember in every case that in a patient with Puerperal Fever, the production of any kind of solution of continuity is dangerous. She is surrounded by septic materials in the wards of a hospital, and her system contains them also. Erysipelas may be very liable to supervene, even on the small spot of a leechbite. Under ordinary circumstances, however, and administered with proper care, these agents may be very useful. They should be applied in cases of peritonitis, metritis, pleurisy or the like, complicating the puerperal septicæmia.

I think, however, that emollient poultices, containing medicinal agents, such as the tincture of opium, belladonna or the like, are preferable in every case.

As regards the opening of abscesses, or incision of old thrombi, or the performance of paracentesis, all these measures must be left to the discretion of the practitioner, who will consider the risks, profit by the favourable circumstances present, and adopt the proper time.

Notwithstanding all these measures, our patient may succumb. The prevention of the infection, therefore, is the only thing that may insure us with success, and to this result our greatest efforts ought to be directed.

A physician should not go and attend a patient during her confinement, if he is at the same time attending others with Puerperal Fever, or Erysipelas or the like.

If his assistance is required during the process of delivery of the fœtus, he must pay as much attention as possible to cleanliness. His hands must be washed with some disinfectant, and the same may be said of any instruments, sponges, towels and so forth that be may employ.

The lying-in room may be, if possible, white washed during the last days of pregnancy; and lime with charcoal may be placed in a corner of the room.

Free ventilation must be secured, and the apartment must be kept at an equal temperature, avoiding drafts.

Then the physician must endeavour by all means to secure as little traumatism or solution of continuity as possible, avoiding the performance of obstetrical operations, unless they are urgently required. He should also follow very carefully all the obstetrical rules for helping the uterine contractions, for avoiding the rupture of the perineum and for extracting the placenta in the proper manner.

And here is a very important point: he should immediately after labor, apply to the vulva a napkin wrung in a disinfectant. He should not remove this napkin without applying immediately another one, wrung in the same disinfectant, such as the solution of carbolic acid or Labarraque's solution in cinnamon water, and he should keep up this process constantly for about the first ten days after delivery. These napkins will fulfil the double purpose of preventing the introduction of septic materials and of collecting the lochia. They ought to be changed frequently.

Then the practitioner must watch his patient carefuly for the first twelve hours after delivery, noting her temperature often. For if he notices that it has ascended during this period above the physiological limits, he must at once look out for a metritis. And this is the appropriate time, it seems to me, to employ an intra-vaginal or even an intra-uterine injection. Cases are reported of the general infection having been prevented by this application in time.

The subject of the prophylactic treatment in public institutions is too vast, to enter upon its consideration here. We know, however, that during the last few years interesting discussions have been held in the scientific societies of Europe, for the purpose of regulating in the best possible manner the lying-in asylums. But the predominant idea is that of abolishing these large institutions, substituting for them smaller ones, and affording at the same time to poor women as many opportunities as possible for their labors to take place in private houses, rather than at those asylums.

Gentlemen of the Faculty, I finish my work here, and, most respectfully, transmit it to your hands. You will find in it many faults and defects; but I cherish the hope that you will grant me the benefit of your benevolence.

PARIS. — TYP. A. PARENT, RUE MONSIEUR-LE-PRINCE, 31.